BROUGHT TO YOU BY

MEISTERMEDIA WORLDWIDE

CEAg World™

2025 Industry Report

RIDING THE WAVE

State of the CEA Industry

Reduce Water Usage,
Improve Fertilizer
Efficiency, and
Increase
Profits!
with
STOCKOSORB®
FLOBOND™
STOCKOPAM
available exclusively through
GREEN SOLUTIONS LLC
AGRICULTURE & HORTICULTURE SOIL SOLUTIONS
Find Out How
gsigreen.com
30 New Lane | Cromwell, CT 06416 | 860-368-7309

2025 State of the CEA Industry

4.

FROM THE EDITOR: ALONG FOR THE RIDE

Say what you will about CEA as a business, but it's not boring.

8.

YEAR IN REVIEW: WIN, LOSE, OR DRAW?

Over the past 12 months, CEA produce operations in North America have weathered many ups, downs, and surprises. Here's a look back at some of the biggest news stories and what they signal for the industry going forward.

14.

SURVEY SNAPSHOT: FIRST LOOK AT THE 2025 GLOBAL CEA CENSUS

Data from this year's census reveals more caution in expansion plans but stronger support for AI integration.

18.

FINALISTS: PAVING THE WAY

Meet the 12 contenders for the inaugural CEAg World Impact Awards.

24.

EXPERT INSIGHTS: WHAT URBAN FARMING GOT WRONG

The promise of widespread CEA operations growing produce within cities remains unfulfilled in the U.S., but those on the inside hold out hope—and offer advice—for getting there.

28.

RESEARCH: BIG IDEAS FOR CEA'S NEXT WAVE

Ag scientists were hard at work in 2025, developing technology and testing new methods to move CEA further into the mainstream. Here's a closer look at the projects that really grabbed the industry's attention.

34.

NEW PRODUCTS: TOP-NOTCH TOOLS

Learn more about these products from some of the exhibitors at the 2025 CEAg World Conference and Expo.

STAFF

Kristin D. Zeit
CEAg World Content Lead
kzeit@meistermedia.com

Dana Shugrue
CEAg World Content Specialist
dshugrue@meistermedia.com

Maggie Puskas
Graphic Designer
mpuskas@meistermedia.com

Karen Gerome
Group Commercial Lead
kgerome@meistermedia.com

Gregg Langermeier
Senior Account Manager
glangermeier@meistermedia.com

Jonathan Hopper
Market Development Representative
jhopper@meistermedia.com

Lauren Lewis
Corporate Director, Events & New Ventures
llewis@meistermedia.com

Amy Reddington
CEAg World Show Director
areddington@meistermedia.com

Magda Gibson
Conference Producer
mgibson@meistermedia.com

Ron Trznadel
Events Sales Manager
rtrznadel@meistermedia.com

Olivia Roma
Assistant Show Director
oroma@meistermedia.com

CONTRIBUTORS

David Ceaser
Lead Agronomist
Agritecture

Victoria Brian de Moura
South American Representative
Agritecture

Meister Media Worldwide, Inc.
Franklin Hall, 4420 Sherwin Rd, Suite 4,
Willoughby, OH 44094-7995, U.S.
440-942-2000 • 800-572-7740
CEAgWorld.com • MeisterMedia.com

FROM THE EDITOR

Kristin D. Zeit
Content Lead
kzeit@meistermedia.com

Along for the Ride

Say what you will about CEA as a business, but it's not boring

I started my job as content lead of CEAg World in January 2025 knowing that I'd need to immerse myself quickly in the CEA industry to get up to speed. I've covered a lot of topics and industries throughout my editorial career, but this one has been the most volatile—and fascinating.

How do you get up to speed on something that's still a moving target? This past year has been a whirlwind, particularly for the vertical farming sector, which continues to consolidate. Elsewhere, government policies are keeping everyone on their toes, some big greenhouse growers are expanding, and it feels like promising new ag tech and research are announced every week.

And so our final industry report of the year, *State of the CEA Industry*, takes a look back at the past 12 months and offers some thoughts on where we go from here. Our lineup of articles includes a rundown of the biggest headlines affecting CEA in North America; promising research and product roundups aiming to improve crop success; and a deconstruction of the urban farming landscape from those who are determined to make it work.

CEA is still getting its bearings, but there's hope and excitement on the horizon.

It's all in the service of advancing food under cover. That's CEAg World's tagline and the mission behind everything we offer. It's also what drives the 12 finalists in our inaugural CEAg World Impact Awards program, which is the story I'm most excited to bring you in this issue.

These 12 finalists across four categories—Visionary Grower, Innovator, Emerging Leader, and Educator/Research—are very different in a lot of ways, each with a unique CEA focus and specialty. Their paths into this world differ, as well, but they all believe in the future of CEA and how important it is to food security and sustainability worldwide.

Yes, profitability, labor, and energy challenges remain stubbornly problematic. But little by little, person by person, you're all moving the needle on what CEA can be. As we wind down the year, there's hope and excitement on the horizon. ■

PHILIPS

Horticulture LED

Grow with the pros

Bill Brar
Canadian Valley Growers, Aldergrove, British Columbia

Canadian Valley Growers experienced an almost 30% reduction in crop time, and stronger and faster rooting, heavier leaf mass, and better leaf color after partnering with Signify to install more than 1,500 Philips LEDs. "We looked at multiple lighting solutions including hybrid and straight LED for our butter leaf, multi-leaf, and teen leaf lettuce, and decided to go with Philips LEDs. It has been a day and night difference with Philips toplighting. The results have been fantastic and support has been great."

innovation you

Philips GreenPower
LED toplighting linear

Watch the Canadian
Valley case study

About CEAg World

From high tunnels and hoop houses to high-tech greenhouses, vertical farms, and container farms, controlled environment agriculture is redefining how we grow food. CEAg World — the newest brand from Meister Media Worldwide, a company with nearly 100 years of expertise in global agriculture — brings thought leadership, context, and community to the expanding business of growing food under cover.

CEAg World™
ADVANCING FOOD UNDER COVER™

Charter Partners

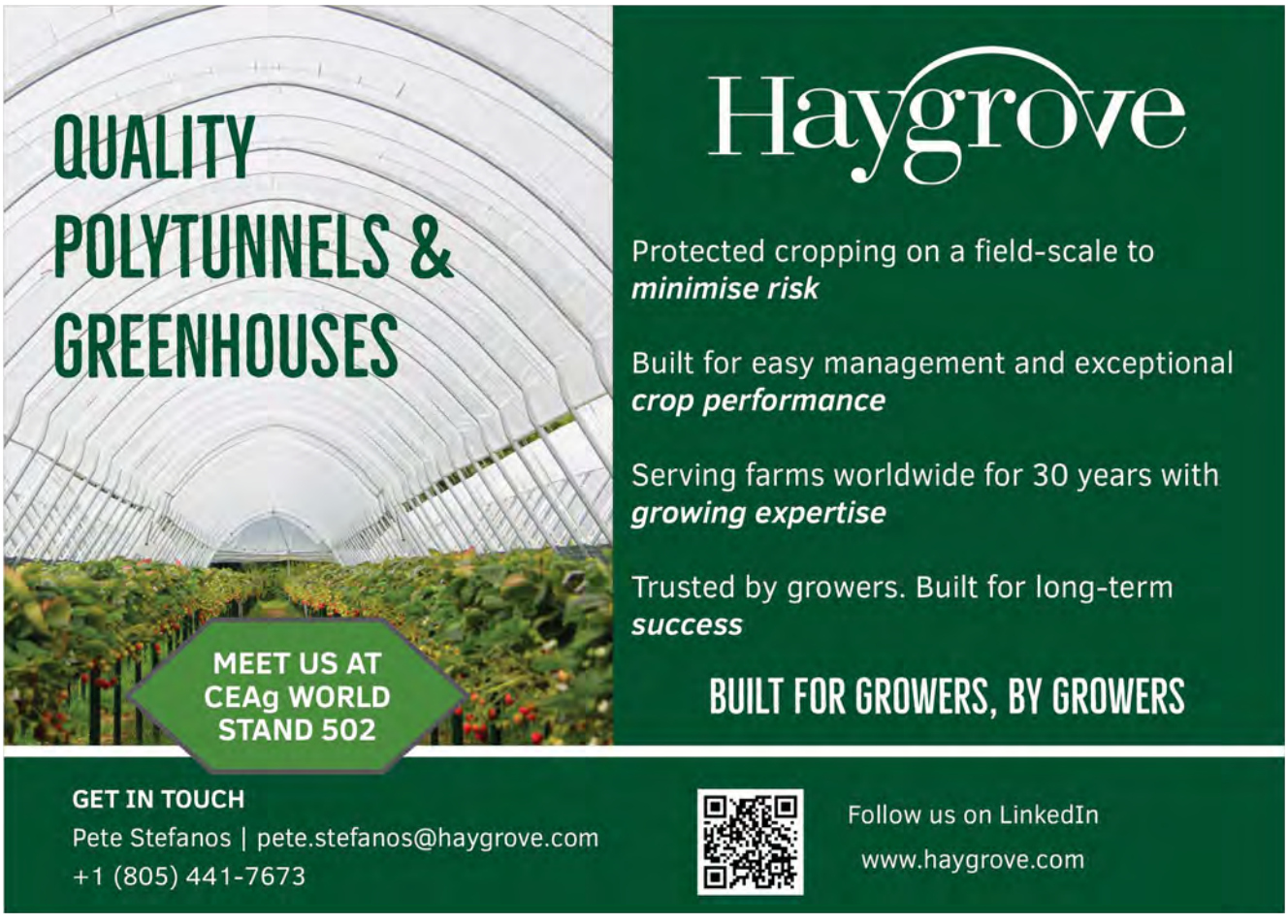
bpgrower.com
BEAVER PLASTICS

CROP KING INCORPORATED

ENZA ZADEN

GREENER SOLUTIONS INTERNATIONAL
AGRICULTURE & HORTICULTURE SOIL SOLUTIONS

PHILIPS



Take the lead.

CEA growers know indoor ag is the next big farming revolution. As you put it all on the line as one of the pioneers, Enza Zaden is there to provide support, expertise and innovative genetics through a highly collaborative approach to achieve success. It's been our promise since 1938.

ENZA ZADEN

Seeds of reliability.
enzazaden.com/us

YEAR IN REVIEW

Win, Lose, or Draw?

Over the past 12 months, CEA produce operations in North America have weathered many ups, downs, and surprises. Here's a look back at some of the biggest news stories and what they signal for the industry going forward

Great Lakes Growers

GLOBAL AND DOMESTIC FORCES

Tariffs Create Turmoil

In early 2025, volatile Trump administration tariff policies disrupted North American CEA operations. A 25% Canadian tariff was imposed, briefly paused after three days (costing Ontario growers $6 million, according to Ontario Greenhouse Vegetable Growers' executive director, Richard Lee), and was then followed by steel/aluminum and global baseline tariffs. The measures impacted critical inputs—peat moss, potash fertilizers (Canada supplies 85% of U.S. imports), seeds, and equipment—increasing costs for U.S. growers and greenhouse structure manufacturers. U.S. operations faced higher capital expenditures for facility expansion and potential supply chain disruptions.

LOOKING AHEAD:

Uncertainty continues for 2026, as unpredictable tariff policies make long-term planning difficult. Canadian growers may increasingly redirect produce away from U.S. markets if tariffs persist, potentially causing supply disruptions and price spikes for American consumers while discouraging cross-border infrastructure investments that have historically strengthened the integrated North American CEA ecosystem.

U.S. Withdraws from 2019 Tomato Suspension Agreement

The U.S. withdrawal from the 2019 tomato suspension agreement, effective July 14, 2025, imposes approximately 21% antidumping duties on Mexican tomato imports. The policy has had mixed reactions across the agriculture industry: Florida field growers pushed for termination, while the CEA Alliance expressed disappointment. Mexican imports account for 88% of greenhouse tomatoes in the U.S., but many operations are owned by U.S. and Canadian companies with cross-border greenhouse networks. The tariffs create winner-loser dynamics even within individual companies' operations, as North American firms may produce in multiple countries, including Mexico.

LOOKING AHEAD:

Companies with U.S.-only operations may gain a competitive advantage, while integrated North American producers face complex decisions about moving production northward versus absorbing tariff costs on Mexican operations.

"In Canada, national attention is shifting toward food sovereignty. Investments in CEA—particularly vertical and greenhouse farms—are being championed not just for innovation, but as infrastructure critical to food security."

—VONNIE ESTES, INTERNATIONAL FRESH PRODUCE ASSOCIATION

GLOBAL AND DOMESTIC FORCES, continued

Shifting Farm Labor Policies

In 2025, U.S. farm labor policy has been in flux, with H-2A at the center of the storm. Federal agencies introduced new wage rules and worker-protection measures, some of which were quickly challenged in court, creating confusion for employers heading into peak planting and harvest seasons. Growers have leaned more heavily on H-2A than ever before, but rising program costs and legal uncertainty are squeezing margins. For North American CEA operators, shifting rules on wages and worker protections add pressure to already tight budgets and make workforce planning more complicated than ever.

LOOKING AHEAD:

Policy volatility is likely to continue. Larger CEA producers may adapt through compliance teams and automation, while smaller operators could feel the strain of higher costs and fewer labor options.

Substrate Shortages Grow Worldwide

In fall 2025, CEA growers were alerted to significant substrate shortages due to global supply chain disruptions. Heavy rainfall in key peat-producing regions, such as the Baltic States, Finland, and Sweden, led to a 75–85% reduction in peat harvests, with white sphagnum peat production falling to just 25–35% of normal levels. Simultaneously, irregular weather patterns in tropical zones affected coco coir supply, causing further strain on substrate availability. These shortages resulted in increased prices and limited access to essential growing media, prompting CEA growers to seek alternative substrates and adjust production strategies to mitigate the impact on crop yields and operational costs.

LOOKING AHEAD:

Expect continued pressure on substrate availability and rising costs due to ongoing supply constraints from key peat and coco coir regions. This will likely accelerate the adoption of alternative growing media and innovations in substrate recycling.

VERTICAL FARMING SHAKEOUT

Bowery Farming Ceases Operations

In November 2024, Bowery Farming abruptly shut down operations, laying off hundreds and abandoning expansion plans after failing to secure new capital. Once valued at more than $2 billion, the vertical farming giant was undone by high energy and labor costs, operational challenges (including a widespread phytophthora outbreak), and overambitious scaling fueled by venture funding and debt. The closure shocked many in the industry, but it followed a string of high-profile U.S. CEA shutdowns, highlighting deeper structural challenges across the sector.

Plenty Files for Bankruptcy, Returns Two Months Later

In March 2025, Plenty Unlimited filed for Chapter 11 bankruptcy, citing fundraising challenges despite nearly $1 billion in prior venture capital backing. This was after launching a vertical strawberry farm in Richmond, Va., in partnership with Driscoll's in September 2024, and then shutting down its leafy-greens operation in Compton, Calif., in December. By late May 2025, Plenty emerged from restructuring under a slimmer business model focused solely on strawberry production at its Virginia facility and continued R&D in Wyoming.

Freight Farms Shutters, Growcer Picks up Assets

Boston-based container farming company Freight Farms ceased all operations at the end of April and filed for Chapter 7 bankruptcy after 13 years in business. The shutdown followed a period of financial strain that included layoffs and a scrapped merger, leaving hundreds of growers without access to support services,

software, or parts. In July, Ottawa-based Growcer won the bid to acquire all of Freight Farms' assets. Growcer, which builds similar modular vertical farms, committed to providing seamless transition support for existing Freight Farms customers across all 50 U.S. states and multiple countries worldwide.

80 Acres Farms Grows Through Acquisition

80 Acres Farms made news several times in 2025, beginning in February when it announced it had raised $115 million in investment capital during 2024. At that time, the Hamilton, Ohio-based vertical farm also acquired Plantae Biosciences, an Israeli biotechnology company specializing in accelerated plant breeding technology. In March, it acquired three indoor vertical farms previously owned by bankrupt Kalera, located in Georgia, Texas, and Colorado. And in August it merged with Soli Organic, setting the stage for it to become one of the world's largest indoor ag companies.

Eden Green Closes Doors

Eden Green Technology announced that it would shut down its two Cleburne, Texas, greenhouses on December 13, 2025, cutting 102 jobs. CEO Eddy Badrina confirmed the permanent closure of the vertical farm. The move followed a $40 million expansion announced less than two years ago to boost production and regional employment.

LOOKING AHEAD:

Recent vertical farming bankruptcies and closures highlight the limits of overexpansion and underperforming business models. Survival increasingly depends on strategic acquisitions, operational focus, and aligning innovation with long-term profitability.

"One of our corporate values is, 'Fail fast, cheaply, and with tremendous insight.' Once we figured out what worked, then we built slightly larger systems, and then started thinking about how to scale it."

—MIKE ZELKIND, 80 ACRES FARMS

YEAR IN REVIEW

GREENHOUSE GROWTH

Cox Farms Takes the NA Crown

Over the past year, Cox Farms has rapidly ascended to become North America's largest indoor farming operation, with more than 700 acres of greenhouse production. In late 2024, the company significantly expanded its footprint by acquiring Greenhill Produce's 150-acre Ontario facility through its subsidiary Mucci Farms. Around the same time, BrightFarms—another Cox brand—opened an advanced 8-acre greenhouse in Macon, Ga., with plans to scale it by an additional 24 acres.

Vegpro Expands from Field into Greenhouse

Vegpro International, a major Canadian field lettuce producer available in more than 2,500 retail locations, invested $135 million to build one of Canada's largest greenhouses in Sherrington, Quebec. The 12.8-acre facility officially opened in May, producing premium lettuce varieties under the brand name Folia as a complement to the company's core business of field-grown greens and other vegetables. CEO Anthony Fantin says Vegpro is looking to build more greenhouses in regions where it already has a field base.

U.K.'s Oasthouse Ventures Launches Greenhouse Business in U.S.

Oasthouse Ventures Ltd. of the U.K. is progressing with its $104.8 million, 65-acre greenhouse project in Carroll County, Va., branded as Pluck'd. Construction commenced in May 2025 and is expected to begin tomato production by March 2026. This facility will produce more than 45 million pounds of tomatoes annually for distribution across the Northeast, Southeast, and Midwest.

■ LOOKING AHEAD:

Growth in the greenhouse sector is being driven by large-scale expansions, diversification from traditional farming, and increased international investment. Success will depend on blending regional expertise, technological innovation, and strategic partnerships to deliver sustainable, year-round produce efficiently. ■

"While the field is the more romantic idea of farming—preparing the land, seeding, taking care of the crop—the greenhouse is more like a factory of lettuce. And we need to be as efficient as a factory."

—ANTHONY FANTIN, VEGPRO

The Technical Support & Service You Need for Success

CropKing supports growers in all stages of their business through consulting, site visits and technical support.

Not sure where to start? Register for a 2-Day Grower Workshop and learn greenhouse basics and hydroponic best practieces or purchase our business plan for hydroponic lettuce and tomato growing. 2026 dates are open for registration!

CROPKING® INCORPORATED

330-302-4203 · www.CropKing.com

SURVEY SNAPSHOT

First Look at the 2025 Global CEA Census

Data from this year's census reveals more caution in expansion plans but stronger support for AI integration

BY VICTORIA BRIAN DE MOURA AND DAVID CEASER

The Global CEA Census serves as an annual barometer of the industry, providing a way to track confidence, challenges, and opportunities across the CEA landscape. With the census now in its fifth year, Agritecture has once again partnered with CEAg World to survey the industry and share a comprehensive snapshot of where it stands today. This year's survey gathered 478 responses across 57 countries, giving robust insight into global perspectives.

A new addition in 2025 is a special section on artificial intelligence (AI): how it's being adopted, what operators expect from it, and what an AI-enabled CEA industry might look like.

Expansion Appetite: Still Strong but Moderating

One of the most telling questions in the census—asked every year—focuses on plans for expansion. This provides a clear measure of both confidence and future expectations. Importantly, an operator typically only plans to expand under one of three conditions:

1. The current operation is profitable, and there is additional market share to capture.
2. The current operation is not yet profitable but sees tools or solutions to achieve profitability in the near term.
3. The current operation is not profitable but has a pending opportunity that would allow scaling toward profitability.

In 2025, 68.2% of operators said they plan to expand their facility within the next two years. While still a majority, this marks a decline from last year, when 84% answered "yes" to the expansion plans question.

This cooling trend is likely driven by tightened funding conditions and sharp increases in energy and input costs affected by the war in Ukraine. Looking more closely at facility types, we see the greatest appetite for expansion among vertical farms and the least interest in expansion among mid-tech greenhouses.

Overall, while expansion enthusiasm has declined, the data suggests operators remain committed to growth where they see viable pathways to profitability.

Energy and Labor: Persistent Headwinds

The two dominant challenges this year remain energy and labor costs.

1. **Labor:** More than 60% of operators reported labor costs accounting for more than 20% of their total operating expenses. High labor costs and scarcity are ongoing concerns across both indoor and open-field agriculture. Although automation and robotics are often proposed as solutions, most are either too expensive or not economically viable in many markets today.
2. **Energy:** High energy costs were again cited as a top concern. Even among operators that have attempted mitigation strategies—such as energy efficiency measures or renewable integration—the challenge remains stubbornly present.

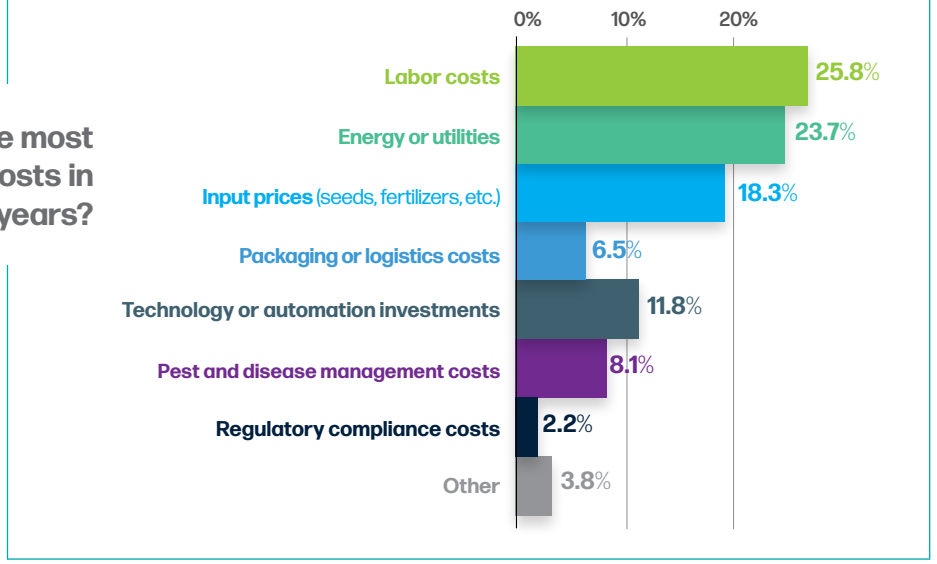
Together, energy and labor continue to shape decision-making among CEA operators, slowing some expansion plans while motivating greater exploration of technological solutions.

AI: From Hype to Emerging Reality

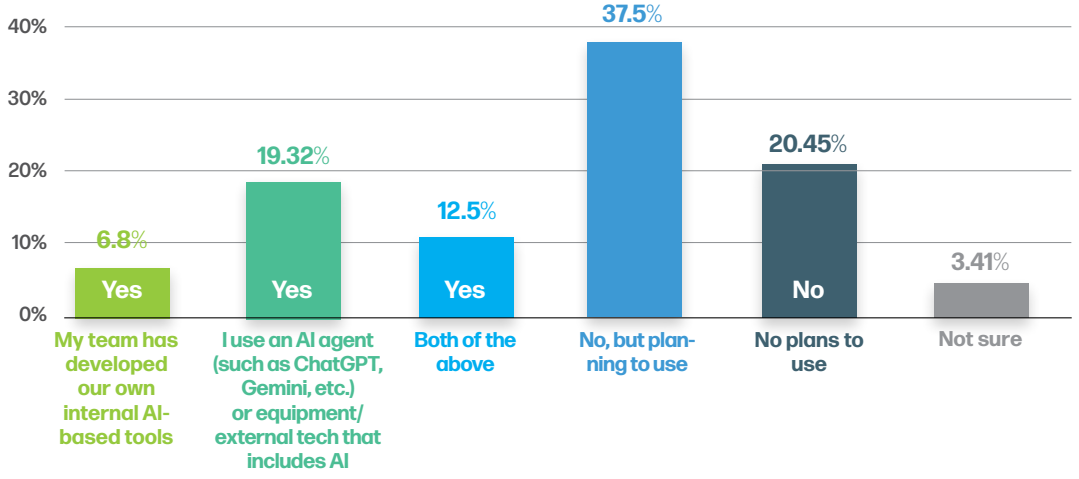
AI is moving from abstract concept to tangible application in CEA. Operators increasingly see AI as a tool to drive better crop outcomes, reduce pests, and make farms more efficient.

Adoption is already under way: Many operators report integrating AI tools into multiple areas of their farms. Areas of most interest for AI use in CEA are climate control and irrigation/nutrient management. The next tier of interest includes areas such as harvest scheduling, growth monitoring, and

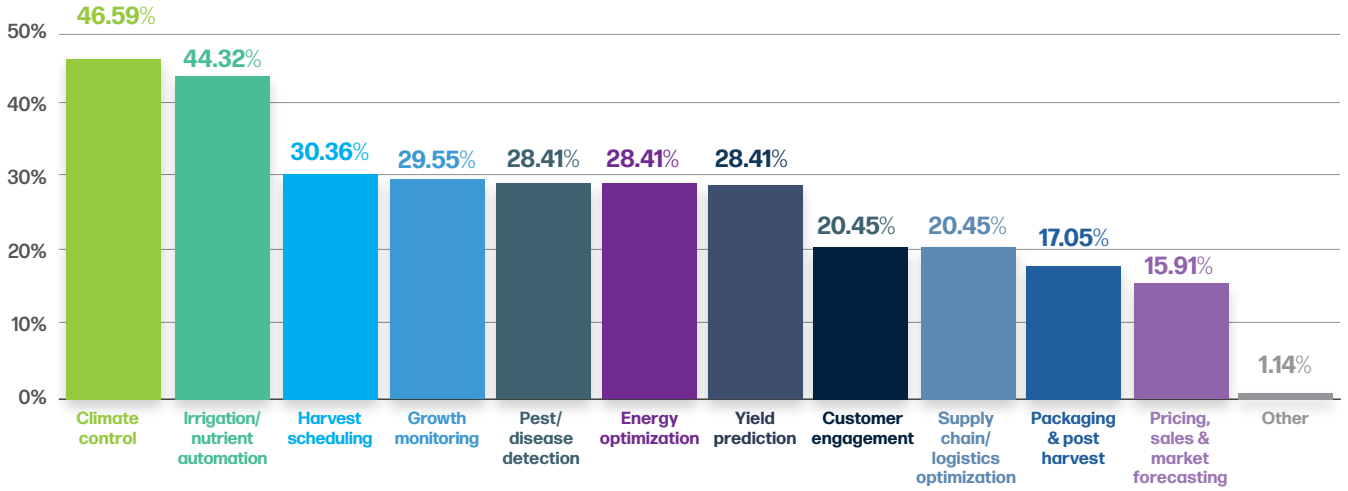
What factors have most influenced your costs in the last 3 years?



Are you currently using AI in your operations?



If using or planning to use AI within the next 2 years, where are you applying it?



pest/disease control. While enthusiasm is high, the largest group of respondents is in the "planning to use AI" category, indicating that AI incorporation in CEA is still in its infancy. Regarding barriers to AI adoption, respondents who are already using AI noted that the economic payoff remains uncertain. For many, upfront costs continue to be a barrier.

The census shows that optimism about AI's role in CEA is strong, though opinions differ among growers, technology suppliers, and experts. The full report (to be released in the coming months) will explore these perspectives, revealing where alignment exists and where expectations diverge.

Looking Forward

The 2025 Global CEA Census paints a picture of cautious optimism. The appetite for expansion has declined but remains strong, with nearly seven in 10 operators planning to grow their operations. Energy and labor costs are the most critical headwinds, underscoring the need for cost-effective innovation. At the same time, AI adoption is advancing more quickly than many anticipated, signaling that technology is poised to shape the next chapter of CEA.

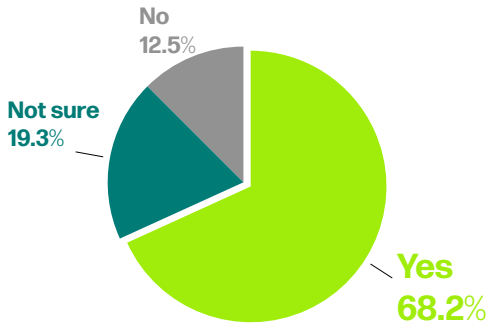
The full report will provide deeper analysis, expert commentary, and year-over-year comparisons. We extend our thanks to our silver sponsors, GrowDirector, Prospiant, and Sollum, and partner organization GLASE (Greenhouse Lighting and Systems Engineering) for supporting this work. ■

Victoria Brian de Moura is the South America representative for Agritecture and served as project manager and co-author for the 2025 Global CEA Census. She brings experience in business analysis and strategic partnerships to advance sustainable agriculture and innovation.

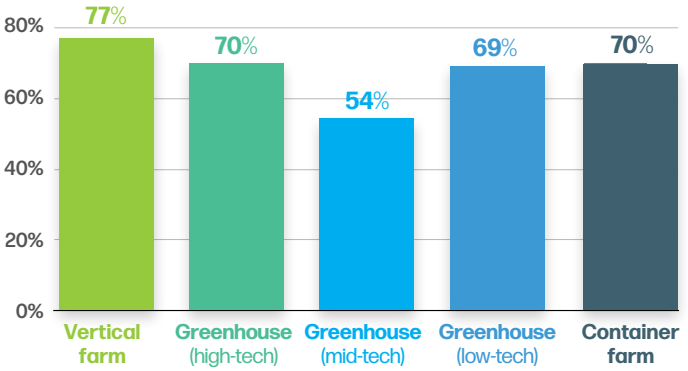
David Ceaser is the lead agronomist at Agritecture and co-author of the 2025 Global CEA Census. With nearly a decade at Agritecture, he has contributed to multiple editions of the census and brings extensive expertise in CEA and farm operations.

SIGN UP TO BE NOTIFIED WHEN THE FULL CENSUS REPORT IS LIVE

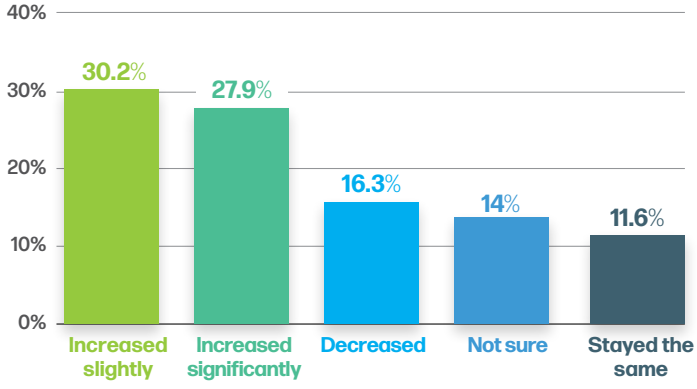
Do you plan to expand your facility in the next 2 years?



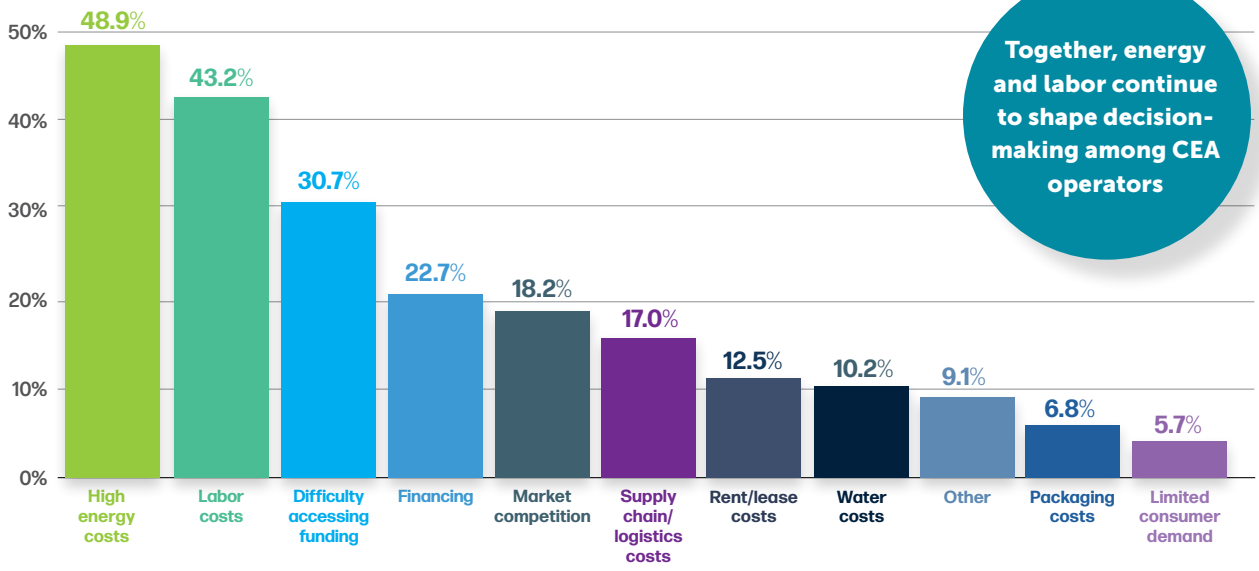
Plans to expand by facility type



How has your cost of production changed in the last 3 years?



What are your biggest current financial challenges?



Together, energy and labor continue to shape decision-making among CEA operators

Gothic Arch Greenhouses
Serving the horticulture industry since 1946!
Concise, In-Depth Insights on Global Protected Crop Trends & Opportunities.
www.GothicArchgreenhouse.com
1-800-531-4769

FINALISTS

CEAg World℠ IMPACT AWARDS

Paving the Way

Meet the 12 contenders for the inaugural CEAg World Impact Awards

BY CEAG WORLD STAFF

Growing produce under cover—and making a living at it—isn't for the faint of heart. The headlines focus on which big greenhouse concern is expanding where; what breakthrough technology is attracting investments; which celebrity-backed venture is struggling. It's an industry that's just getting warmed up, particularly in North America, but its importance to the future of sustainable agriculture and food security is undeniable.

Behind the headlines, good and bad, are many extraordinary people doing everything they can to push CEA forward. So this year, CEAg World has launched the Impact Awards: a program designed to pull some of these trailblazers into the spotlight for much-deserved recognition.

The awards cover four categories: Visionary Grower, Innovator, Emerging Leader, and Educator/Researcher. Over the summer, CEAg World invited its audience to nominate worthy candidates, scoped out the landscape of behind-the-scenes heroes, and compiled this list of 12 finalists (three per category).

Taken together, the finalists paint an incredible portrait of an industry poised for great things. Learn a little bit about each of them on the pages that follow, and check out the online version of this story at CEAgWorld.com/industry-news/impactawards for links to more detailed profiles. On Nov. 20, 2025, the winners will be announced live on stage at the CEAg World Conference and Expo.

VISIONARY GROWER AWARD

The Visionary Grower Award honors an individual who has made a transformative impact on their own CEA operation, leading to remarkable gains in yield, resource efficiency, and/or profitability. The individual's contributions to land stewardship, resource conservation, environmental preservation, and/or food security were also considered.

Bill Ferguson, Riley Creek Farms

Over the last two years, Bill Ferguson turned his forced departure from the poultry business into a CEA pathway. When Tyson canceled his poultry contract in 2023, Ferguson began the grueling work of transforming four empty chicken houses into an 80,000-square-foot indoor farm. Defying those who advised against it, Ferguson learned all about hydroponic production and now Riley Creek Farms serves 6,000 schoolchildren across several Alabama districts with locally grown lettuce. At full capacity, the operation expects to earn $500,000 annually. Ferguson passed away at age 72 just as this issue went to press, but his legacy lives on as Riley Creek Farms makes fresh food more accessible to his community.

Nona Yehia, Vertical Harvest Farms

Nona Yehia asks the question other growers overlook: What if vertical farms could grow opportunity alongside food? As CEO and co-founder of Vertical Harvest Farms, her distinctive "Grow Well" framework actively recruits workers with disabilities and marginalized populations, addressing regional employment gaps while delivering fresh produce locally. Yehia strategically deploys technology to enhance—not replace—worker capabilities. Her vision bridges food access, economic equity, and workforce inclusion, topics that are rarely connected in agricultural innovation. Through radical transparency and adaptability, she's building resilient systems that aim to prove that profitability and purpose aren't mutually exclusive.

Renato Zardo, Great Lakes Growers

As director of growing for Great Lakes Growers, Renato Zardo exemplifies visionary leadership by seeing technology's untapped potential where others see risk. He evaluates innovations through an uncompromising ROI lens, distinguishing genuine breakthroughs from trends. His impact lies in articulating what growers truly need, then pushing suppliers to realize it. Zardo bridges what exists and what's possible, implementing LED lighting, precision climate control, and data-driven management while maintaining operational pragmatism. His innovation, informed decision-making, and ability to transform feedback into industry-advancing solutions demonstrate true visionary leadership.

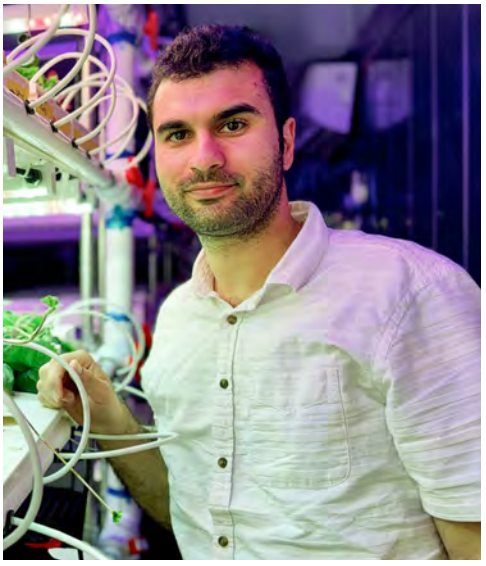
FINALISTS

INNOVATOR AWARD

The Innovator Award recognizes an entrepreneur or business leader who has pioneered and implemented a new tool, concept, or practice that has significant implications for CEA. This award recipient will be someone who has used their expertise to drive tangible improvements for growers, enhancing productivity, sustainability, and overall farm success.

Corey Ellis, Growcer

As founder of the container farming company Growcer, Corey Ellis measures every advancement by a simple standard: Does it tangibly increase revenue, decrease costs, or reduce risk for growers? His systematic methodology translates lab-stage research into market-ready solutions. Ellis challenges the status quo of the CEA industry by openly publishing his research results, arguing that innovation is worthless if it's not practical or implemented by growers. Following Growcer's acquisition of Freight Farms' assets in July 2025, he's scaling his business model while advocating for industry-wide collaboration.



Moein Moosavi-Nezhad, North Carolina State University

The North Carolina State Ph.D. student achieved what many deemed impossible: growing more than 1,200 daughter plants per square meter in an indoor vertical system. Through the systematic study of photoperiod, light quality, and strategic intercanopy lighting, Moosavi-Nezhad addresses field strawberry growers' critical pain points like low propagation efficiency and disease management. With his breakthrough research, Moosavi-Nezhad bridges scientific rigor with practical application, actively sharing findings through publications, conferences, and grower engagement.

Sam Bertram, OnePointOne

After spending eight years navigating vertical farming's challenges, Sam Bertram, OnePointOne's CEO, made a pivotal shift: strategic partnership over reinvention. Rather than developing costly proprietary technology, he reimagined AutoStore's proven warehouse cube-storage system for CEA, creating Opollo Farm—where robotic shuttles move plant-filled bins to automated workstations. His pragmatic philosophy—"innovate only where you need to"—focuses on improvements delivering 5-10% cost reductions.

EMERGING LEADER AWARD

The Emerging Leader is a rising talent in CEA who demonstrates exceptional promise and leadership with new solutions, strategic thinking, or leadership. This award honors an innovator driving change through the adoption of cutting-edge technologies and ideas that enhance productivity, sustainability, and efficiency, shaping the future of agriculture.

Danielle Rose, Ceragen

Aiming to revolutionize plant health in CEA through microbial innovation, Danielle Rose connects cutting-edge science to practical grower solutions as founder and CEO of Ceragen. By translating complex microbiology into actionable guidance, she helps close the communication gap between scientists and growers. Her business has recently taken on the important challenge of disease testing in addition to its line of microbial products. In a testament to her promise for the industry, last year, Rose raised $2 million to expand Ceragen, including funding from American venture capitalists and backing from the Canadian government.

Gretchen Schimelpfenig, GLASE

Gretchen Schimelpfenig has improved the CEA industry by prioritizing energy efficiency and inclusive leadership. As executive director of Cornell's GLASE consortium and senior energy engineer at Energy Resource Integration, she accelerates the adoption of advanced lighting and environmental systems while reducing CEA's energy footprint. Schimelpfenig champions workforce development through her Vivid Canopy initiative as well as CEA Works training and E-GROW youth education programs, forging new career pathways in ag tech. She leads by demonstrating how energy efficiency and a diverse workforce benefit the entire CEA industry, creating a global network of allies.

Trevor Terry, Kentucky Horticulture Council

Trevor Terry has become a significant CEA "connector" as the executive director of the Kentucky Horticulture Council. Over the past several years, he has forged partnerships between Dutch greenhouse innovators and Kentucky producers that catalyzed 832% growth in protected agriculture, positioning Kentucky as the second largest CEA state in the U.S. Terry's leadership transcends traditional advocacy—he facilitates innovation, builds collaborative infrastructure, and connects local growers to global knowledge networks, translating international expertise into actionable opportunities that accelerate Kentucky's CEA momentum.

FINALISTS

CEAg World™ IMPACT AWARDS

On Nov. 20, 2025, the winners will be announced live on stage at the CEAg World Conference and Expo.

CEAg World Conference and Expo
November 19-21 • Durham, North Carolina

EDUCATOR/RESEARCHER AWARD

The Educator/Researcher Award recognizes an individual whose outstanding contributions have advanced CEA methods through research, education, and outreach. This person demonstrates leadership, fosters collaboration, and shares insights that enhance CEA practices, sustainability, and productivity, while exemplifying innovation, professionalism, and stewardship.

Chieri Kubota, The Ohio State University

As director of The Ohio State University's Controlled Environment Agriculture Center (OHCEAC), Dr. Chieri Kubota has reshaped CEA through decades of pioneering research. Her expertise spans strawberries, tomatoes, leafy greens, and vegetable grafting physiology. Leading OSU's research consortium, she bridges academia and critical industry challenges—from propagation optimization to indoor breeding programs and data-driven climate control. Her work exemplifies how applied science accelerates agricultural innovation to make CEA accessible and sustainable for growers across the globe.

Ricardo Hernandez, North Carolina State University

Dr. Ricardo Hernandez centers his research around grower problems, not academic hypotheses. As associate professor at NC State and director of the CEA Coalition, he revolutionizes CEA through industry-driven solutions in propagation optimization, speed breeding, and agrivoltaics. In three years, he built an industry-funded network where growers set research priorities, launching diverse trials from AI stress sensors to airflow modeling. A former mechanical engineer turned agronomist, he champions student innovation through AI integration and critical thinking, solving today's practical challenges while empowering tomorrow's agricultural leaders.

Roberto Lopez, Michigan State University

Dr. Roberto Lopez, associate professor and CEA specialist at Michigan State University, has transformed CEA through research on LED spectrum optimization, temperature management, and CO_2 strategies that maximize propagation rates, crop timing, and energy efficiency across a variety of growing systems. His lighting research is critical to the industry's LED transition, optimizing yield per kilowatt-hour amid rising energy costs. Co-developing the e-GRO platform, he delivers research-based production protocols to more than 4,800 operators across 130 countries, making CEA knowledge universally available. ■

CEAg World
Conference and Expo

See You in November 2026!

ACHIEVE YEAR-ROUND SUCCESS WITH FOOD GROWN UNDER COVER.

Stay in the Loop!

Sign Up for Updates>>

Connect on Social>>

CEAgWorld.com/Events

#CEAgWorld

EXPERT INSIGHTS

What Urban Farming Got Wrong

The promise of widespread CEA operations growing produce within cities remains unfulfilled in the U.S., but those on the inside hold out hope—and offer advice—for getting there

BY DANA SHUGRUE AND KRISTIN D. ZEIT

One of CEA's biggest selling points is its potential to bring healthy, locally grown produce into areas that otherwise don't have enough land or the right climate for farming. That includes densely populated cities—and while some countries (e.g., Singapore, Japan) have demonstrated relative success with indoor urban farms, progress has been challenging elsewhere.

The white whale of profitability is a big part of the difficulty. Urban real estate and energy costs are expensive; permits, proper infrastructure, and logistics can be tricky. The U.S. doesn't have the same level of government subsidization as some other countries for these kinds of endeavors, either, while investor interest worldwide has cooled considerably.

There are rare bright spots: Gotham Greens remains the poster child for successful U.S. urban farming, having expanded dramatically since its first greenhouse launched in Brooklyn in 2011. But it may be the exception that proves the rule. As the company has scaled, most of its facilities have been built in suburban and rural areas across the country.

For truly urban greenhouses and vertical farms, the parameters for success may need to change. Whether it's a community rooftop garden, a small-scale vertical farm, or an industrial warehouse, urban farming still holds vast promise for the future. To find out more, CEAg World's Dana Shugrue reached out to a group of CEA players with diverse experience and insight into urban farming (see sidebar for details) for the roundtable discussion that follows.

Dana Shugrue, CEAg World: Let's talk about how things have evolved in urban indoor farming. Where do you feel mistakes were made, and is there a path to success?

Henry Gordon-Smith, Agritecture: Especially in vertical farming, we continue to see an obsession with technology. [What they're building has to] function as a farm, but in reality they're just trying to sell their tech and create value for it.

I got to tour Local Garden in Vancouver, the first commercial urban farm in North America, when it was first starting out. They missed the mark right out the gate: They were growing leafy greens just to prove their tech worked for a bigger market and ended up going bankrupt in a year and a half. This served as a cautionary tale for me, and I keep seeing the same mistake being made over and over again.

Adrienne A. Wilson, Feed Our Soul: I founded Feed Our Soul in 2018, and I was going to make money by selling greens, because that's

"Growing something your consumers want, getting it to them as soon as possible, and delivering it at a higher quality without burning a lot of fuel in the process is a win in my book." —DEREK PITTS, FARM.ONE

what everybody was doing. But after years of working in different spaces and going to conferences, I realized [we had to solve] the labor issue. How do we teach people how to grow and manage technology on these farms?

You need to have someone in your community who knows how to do agriculture, because who knows when, you know, the next pandemic will happen. These hard skills are becoming less and less accessible. So I turned my organization into a nonprofit and started focusing on the educational piece.

Meg Burritt, Planted Detroit: Adrienne, what made you decide to build your own indoor farm instead of partnering with an existing one and bringing your educational skill set there?

Wilson: One, I felt like I had to do it myself if I was going to teach people. I wanted to be a grower for so long, to get my hands into it physically. And two, I didn't really find anyone in our local economy. There was one, but it was about two hours away from the city limits. I wanted to focus on that local piece, to make sure it's accessible to the Black and Brown community.

Burritt: You raised a good point: Should some of these businesses be structured as nonprofits, while others are pure agricultural ventures or tech companies? Many of these CEA businesses see the writing on the wall about failure, then pivot to trying to sell their tech. I think people are making that switch because they don't know how to effectively grow leafy greens at scale to become profitable.

Gordon-Smith: I thought rooftop greenhouses were interesting, but they basically just didn't succeed. They were integrated into buildings that were driving new forms of development and sustainability that I found fascinating—like Sky Vegetables, where they used waste heat to heat the plants and they'd capture rainwater.

But the scale matters so much in greenhouses that you couldn't do it. The CapEx is so expensive for rooftop greenhouses that the vertical farm makes more sense. But I was sad to see [many rooftop greenhouses fail]. In the end, I hope it can still have a meaningful impact.

Derek Pitts, Farm.One: We grow high-end microgreens and flowers for the fine dining scene in New York City. When I think about these crops from a business perspective, they're probably the best ones to grow in a vertical, urban farm format. They aren't shippable unless you want to pay overnight shipping and expand your carbon footprint.

To me, the key is figuring out what your market is and how to attack it sustainably. I focus on growing microgreens because high-end restaurants in urban areas like ours can't get enough of them

The Panel

Meg Burritt, Ph.D. Candidate, Michigan State University; former COO, Planted Detroit

Meg Burritt's studies are currently focused on economic solutions to horticultural challenges in CEA. They're a seasoned food industry strategist passionate about food systems and eradicating food insecurity through market innovation. They have over 15 years of experience in strategy and business development at organizations from grocery stores to produce distributors to farms, including Planted Detroit—a vertical farm in Detroit's Islandview neighborhood.

Henry Gordon-Smith, Founder and CEO, Agritecture

Henry Gordon-Smith is a globally recognized expert in climate-smart agriculture and a pioneer in the vertical and urban farming movement. With more than 10 years of experience, he advises governments, real estate developers, startups, and NGOs on how to design and scale sustainable food systems for cities and regions. He has consulted on projects in more than 40 countries and visited urban and CEA farms across five continents, giving him firsthand insights into what drives success in diverse contexts.

Derek Pitts, Founder and CEO, Farm.One

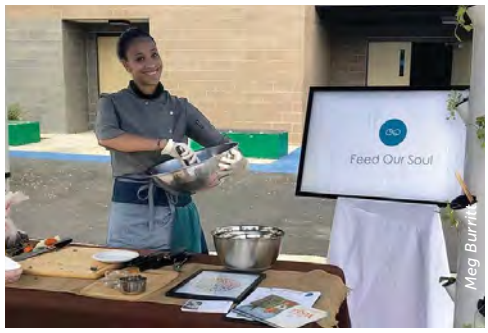
Derek Pitts is a seasoned executive with experience in finance, management, and corporate strategy across various sectors. In addition to helming Farm.One, a 10,000-square-foot vertical farm in Brooklyn that supplies local chefs with specialty greens, herbs, and edible flowers, he's the founder and managing partner of DK-Bell Holding Co., focusing on strategic acquisitions in the food and ag tech sector.

Adrienne A. Wilson, Founder and President, Feed Our Soul

Adrienne A. Wilson is a chef, educator, and community advocate who believes everyone should have the knowledge and tools to grow and cook their own food. Through Feed Our Soul, she leads programs that install community gardens, teach hands-on cooking skills, and design food experiences that strengthen the relationship between people, culture, and the environment. She has more than a decade of hospitality experience and degrees from Carnegie Mellon University and Georgetown University.

Farm.One

Adrienne A. Wilson



Meg Burritt

Farm.One grows edible flowers and microgreens for New York chefs (far left); Adrienne A. Wilson (above and left) is founder and president of Feed Our Soul.

and I make it easy to buy them. Growing something your consumers want, getting it to them as soon as possible, and delivering it at a higher quality without burning a lot of fuel in the process is a win in my book.

CEAg World: What are the biggest opportunities for urban farmers right now?

Wilson: People from the farming and hospitality sides of the industry are connecting to build a network in the agricultural space. I've seen small bodegas sell produce from urban vertical farms and community gardens to make it more accessible to Black and Brown communities. In metropolitan L.A., where food is getting more and more expensive, it's important for everyone to have access to fresh, healthy, local food. Urban farming is a pathway to that.

Gordon-Smith: There's a unique window where we have still have enthusiasm. New entrants are coming in. I still believe urban farming is part of a wider climate change adaptation solution, which is what I'm passionate about.

I want to get real data and proven business models out there, giving us a chance to adapt to the inevitable, intense shocks to our food system that are coming. We want to diversify the crops that work. We want a range of models that are proven to be fundable. We want to have talent that can feed into that.

Burritt: I fully agree about resiliency. I'm also thinking about how we need to right-size our food system to better match both consumer demand and our farms. Even though we're specifically talking about urban farming's financial challenges, agriculture as a whole has faced its own financial challenges. We need to think about where we put the different pieces of the puzzle and better serve consumers so our outdoor farmers can keep their lights on at home, too.

Pitts: You'd be hard pressed to find anyone anywhere, including urban areas, who wouldn't agree that we're on the right path; I've never run into anyone who's against healthy eating. I see the market and that's one of the most motivating opportunities.

It's not about convincing people that they should be doing what you want to do. If you can find a way that they can do it conveniently, you'll be flooded with that kind of opportunity. ■

Dana Shugrue is the content specialist and Kristin D. Zeit is the content lead for CEAg World. This interview was edited for space and clarity.

TRIED & TESTED!

PUT THE LATEST INNOVATION IN HORTICULTURE TO WORK FOR YOU.

Hortiblock® Trays are rugged, Sealed Surface Technology™ (SST) that resist root penetration. **The result?** Improved plant growth, higher yields and a long service life for each tray. It all adds up to better economics for your business. At **bpgrower** we can match your sizing requirements.

Order online at bpgrower.com

RESEARCH

Big Ideas for CEA's Next Wave

Ag scientists were hard at work in 2025, developing technology and testing new methods to move CEA further into the mainstream. Read on for a closer look at the projects that really grabbed the industry's attention

Combining their knowledge as a chemical engineer and an agriculture major, two Cornell students invented sentinel plants that indicate stress symptoms by changing color.

BY DANA SHUGRUE

A Heads-up on Plant Stress

Ava Forystek and Jacob Belding, two students at Cornell University, made headlines in September when their ag invention was named a finalist in the national Collegiate Inventors Competition. Combining Belding's knowledge as a chemical engineer with Forystek's experience as an agriculture major, the pair created RedAlert Living Sensors, which are sentinel plants that indicate stress symptoms by changing color. This gives

The shade of red the tomato plants turn indicates how much nitrogen they need.

Southeast regional FRUIT & VEGETABLE CONFERENCE

Savannah, GA

Precision. Progress. Produce.

Come See Us!

JANUARY 8-10, 2026

Register Today!

seregionalconference.org

Belding and Forystek use small, one-gallon DWC systems in their experiment so they can easily maintain the levels in their nutrient solution.

growers a visible sign that nitrogen levels are too low in their growing medium and allows them to take action before it's too late to salvage their plants.

"The plant will tell you when it's out of nitrogen in the root zone by turning from green to red," Forystek says. "The plant isn't quite starving yet, but growers should add more nitrogen before it reaches that point."

The sentinel plants take nitrogen hunger signals from the root of the plant and pass them through the stem and leaves, changing from green to red to indicate nitrogen levels. "The amount of redness produced corresponds with how strong the hunger signal is," Forystek explains.

In their experiment, Belding and Forystek used one-gallon deep-water culture (DWC) buckets with an air bubble generator attached. "With a small system, I can easily maintain the levels in my nutrient solution," he says. "The only thing I change is the nitrogen levels and I can measure the plant's response from that."

In addition to helping growers prevent plant stress and reduce nitrogen waste, the sensors also make nitrogen testing faster and more accessible.

"Other methods of nitrogen testing have growers ship plant samples within the U.S. or overseas to get a nutrient analysis," Forystek says. "This gives you a preventive measure of knowing exactly where and when to apply more nutrient solution."

The technology is still in its early stages of development, but once Belding graduates from Cornell next spring, he and Forystek are considering launching an ag tech startup.

"It all depends on what the funding situation looks like," Belding says. "But I could see us partnering with commercial growers and doing scale trials within the next couple of years."

One Step Closer to Robot Swarms

In January, it was announced that researchers at the Massachusetts Institute of Technology (MIT) have made significant progress on robotic insects to make artificial pollination more efficient. According to a report from MIT News, the goal of the project is to boost yields for greenhouse growers and indoor farmers. The research was published in the journal *Science Robotics*.

Up until now, even the smallest, quickest artificial pollinators haven't been able to match the efficiency of bees. In light

"Other methods of nitrogen testing have growers ship plant samples within the U.S. or overseas to get a nutrient analysis. This [technology] gives you a preventive measure of knowing exactly where and when to apply more nutrient solution."

— AVA FORYSTEK, CORNELL UNIVERSITY

Currently, the tomatoes grown in van der Zee's system are roughly the size of a blueberry.

of this, MIT researchers set out to create aerial robots that are more agile, maneuverable, and better match the abilities of natural pollinators.

Past versions of the robotic insects were much larger than bees (about the size of a microcassette tape) and had eight mechanical wings, which prevented them from staying in flight for long periods of time. The new design is about half that size and has only four wings, helping stabilize the bots and allowing them to carry extra weight.

In addition, the researchers created stronger transmissions that connect the robots' mechanical wings to the artificial muscles (which are composed of elastomer and thin carbon nanotube electrodes) that make them flap. This makes it easier for the robots to fly and improves their endurance.

The researchers' robots are now lighter than a paper clip, which improves their agility and reduces the strain put on their mechanical wings. They can also stay airborne for about 1,000 seconds (17 minutes) and fly at an average speed of 35 centimeters per second.

Moving forward, the researchers are working to increase the robots' flight time to more than 10,000 seconds. But first, they're focusing on installing batteries and sensors to make these robotic insects viable for large-scale growing operations.

Growing Fruit Without Roots or Light

Lucas van der Zee, a Ph.D. student at Wageningen University and Research (WUR) in the Netherlands, demonstrated in March that it's possible to grow tomato plants from the cellular level up—without light—for a research project dubbed Fruit of Knowledge. With supporting research from Niels Peeters of Utrecht University, whose work focused on inducing flowers from the stem cells of a plant, van der Zee is now able to produce a fruit using sugar, water, a nutrient solution, plant cells, and a few simple mechanical systems (pumps and fans) to facilitate growth.

Van der Zee is using tomato plants for his current experiments. To begin the process, he treats the plant tissue (which is sourced from a seed or embryo) with cytokinins (plant hormones), to develop the meristem of the plant, which is the stem cell zone responsible for new organ growth. The meristem then starts to flower using its own hormonal cues and begins growing fruit on its own after it has been pollinated. The developing fruit is then moved to a sugar-and-nutrient medium, absorbing the nutrients it needs through its cut stalk. This process reduces both energy costs and the resources needed to grow a plant to completion.

Right now, the tomatoes produced in van der Zee's system are exceptionally small: just the size of a blueberry. However, they still taste like tomatoes grown in typical CEA systems and outdoor fields. Moving forward, his research will focus on growing larger fruit. In an effort to achieve this, he has kept the stem attached to the tomato in some scenarios to improve nutrient uptake.

While lowering energy costs is a critical piece of his research, van der Zee's top priority is designing CEA systems that require the simplest growing conditions to produce quality fruits and vegetables.

Plasma Activated Water Shows Major Potential

A paper describing the properties and benefits of plasma activated water (PAW) was published in the journal *Crops* in June. Two of its authors, Drs. Neil Mattson (Cornell University) and Nathan Eylands (the University of Minnesota), detailed the implications for CEA in conversations with CEAg World two months prior to publication.

As Dr. Eylands puts it, PAW is equivalent to "lightning striking a body of water." Plasma, an aggregation of high energy particles with chemical activity, is injected into water to elicit a reaction between the atmosphere and water. "We generate a bunch of reactive oxygen and nitrogen species like hydrogen peroxide, nitrite, ammonia, nitrogen, and all these interesting compounds that are then dissolved into the water," he says.

Those reactive oxygen species (like hydrogen peroxide) offer sanitizing effects for irrigation lines and equipment; they can also be used to soak seeds. Dr. Mattson's research also suggests that PAW produces biostimulant effects on plants so they can better defend against pests and disease. "PAW could be part of a system's approach for growing plants in controlled environments where it improves plant fertility," he says.

But perhaps the most notable benefit of PAW is that it could qualify for organic production if it's generated on-site. This

would be a major win for the industry, as there aren't many organic sources of plant-available nitrogen.

"We call [PAW] the Swiss army knife of agriculture because we have seed germination properties, we're seeing seedling vigor increase, and we're seeing pesticide applications," Dr. Eylands says. "We're seeing all of these enhanced benefits within the plant system ... And there are things we haven't even explored yet."

At this point, Dr. Mattson says, the equipment needed to produce PAW is expensive and can only produce small amounts at one time.

"It isn't ready to be used on a commercial scale," he explains. "I would say using PAW at the seedling stage when low volumes are required seems like a good fit right now unless we get more affordable, industrial type equipment in the near future."

Both researchers agree that more study is needed before PAW can be used on a broader scale. "I always compare it to LED lighting," Dr. Eylands says. "Growers knew it had benefits, but it took a while for them to implement it in their operations."

Better Strawberry Propagation Indoors

Moein Moosavi-Nezhad, a Ph.D. student studying CEA at North Carolina State University, was recognized by the American Society for Horticultural Science for his work with CEA strawberries in June. His work centers on a critical problem for strawberry growers: obtaining clean strawberry plants and growing them in large quantities.

"The U.S. strawberry industry has a challenge of providing growers with clean, disease-free planting material," he says. "CEA offers an alternative solution for open-field systems, as growers can grow high-quality daughter plants at higher yields."

The standard for greenhouse growers is nine strawberry plants per square meter. But by using an indoor vertical system, Moosavi-Nezhad increased the planting density to 19 plants per square meter.

When a "mother" strawberry plant goes into the ground, it produces runners that then produce daughter plants. Since runners grow horizontally in fields, they touch the soil, where they can pick up infections.

"Disease is a big problem," he says. "Based on that and the low yield of plant propagation in open-field nurseries, we wanted to try growing these plants vertically."

The standard for greenhouse growers is nine strawberry plants per square meter. But by using an indoor vertical system, Moosavi-Nezhad increased the planting density to 19 plants per square meter. As a result, he was able to optimize his lighting conditions to propagate between 1,200-1,300 daughter plants: a sizeable increase from the 300 propagated in most greenhouse systems.

"In my experiment, we optimized top versus intercanopy lighting distribution," Moosavi-Nezhad explains. Instead of sourcing light solely from fixtures above the strawberry plants, he also used fixtures around the middle and lower parts of the plants to increase light delivery. As a result, he was able to create better growing conditions for strawberry plants and increase yield.

Moosavi-Nezhad believes that growers will have more consistent access to quality plant material and achieve higher yields via this method. But he says that more research needs to be done on the sustainability of these systems.

"Right now, I can promise growers clean daughter plants and increased yield," he says. "But I can't promise that open-field growers will achieve better profitability when they invest in our system." ■

Dana Shugrue is the content specialist for CEAg World.

SOLLUM®

LED
BY NATURE®

LIGHTING
THAT WORKS FOR YOU.

Sollum's advanced dynamic lighting solution delivers measurable results.

By adapting in real time to crop stage and conditions, growers achieve higher yields and quality, and reduced energy use.

It's about adding productivity, season after season.

AI-Powered by SUNaaS®.

Designed, engineered & manufactured in North America.

©2025 Sollum Technologies. All rights reserved. SUN as a Service, SUNaaS, S.E.A.R.C.H., LED by nature, SF-E², SF-ONE, SF-PRO, SF-MAX and the Sollum logo are registered or trademarks of Sollum Technologies.

CEAg World
Conference and Expo
November 19-21 • Durham, North Carolina

NEW PRODUCTS

Top-notch Tools

Learn more about these products from some of the exhibitors at the 2025 CEAg World Conference and Expo

BY CEAG WORLD STAFF

Pulse Controller from Bartlett Instrument Company

Root health, plant growth, and quality are all affected by oxygen availability. The Pulse Controller from Barlett Instrument Company gives growers the ability to automate dissolved oxygen (DO) dosing. This is done by connecting to a DO sensor to monitor levels and automatically activate equipment, like a pump, to dose oxygen when needed. Growers can easily set alarms, schedule dosing, and more.

Bartlettinstrument.com

Plant-adaptive Lighting System from Leaficient

Sollum Technologies and Leaficient partnered to develop the first closed-loop, plant-adaptive dynamic LED lighting system that adjusts lighting in real time based on plant productivity and growth rates. The combined Sollum-Leaficient solution leverages Leaficient's plant monitoring technology to measure photosynthetic efficiency and adjust light intensity accordingly. This closed-loop approach ensures that plants receive the exact amount of light they need, when they need it, eliminating unnecessary energy costs and optimizing growth conditions for different crop varieties.

Sollumtechnologies.com

UbiGro Cover

UbiGro Cover is a greenhouse covering that helps plants harness more sunlight. The luminescent film uses fluorescence to optimize the sunlight spectrum, increasing crop quality and yield. It incorporates clean nanotechnology (quantum dots) to convert a portion of UV and blue photons into red photons to improve photosynthesis.

Ubigro.com

Precision Irrigation Management from Priva

Priva Precision Irrigation Management is a sensor that enhances greenhouse cultivation with precise irrigation control by measuring plant weight, drain water, and nutrient content. It optimizes resource use, automates irrigation and fertigation, and improves plant health by maintaining ideal moisture and oxygen levels. The sensor can also integrate with existing Priva control modules for greater efficiency.

Priva.com

Polycarbonate and Aluminum Baseboard System from Rimol

Rimol Greenhouse Systems has developed a new polycarbonate and aluminum baseboard system for high tunnels and greenhouses. Rather than a traditional wooden baseboard, this system uses an aluminum extrusion to provide a one-and-done solution for growers. The polycarbonate can be buried over a foot deep for insect and rodent control, and double wirelock can be used to easily attach insect screening with roll-up sides. Rimol's complete kit includes the materials needed to replace old wooden baseboards on an existing greenhouse or install the system as part of a new greenhouse build.

Rimol.com

CEAg World is always on the lookout for new products, ag tech, and innovations. Please email your submissions to Kristin D. Zeit at kzeit@meistermedia.com.

BETTER LIGHT. BETTER PRODUCE.

with UbiGro

Produce demands light.
UbiGro helps you give them more of what they need without adding energy costs.

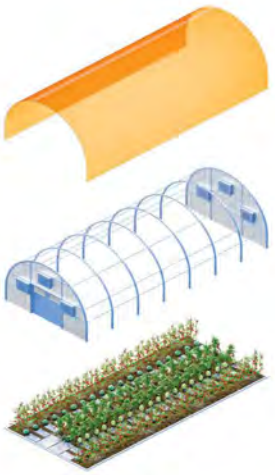
This quantum dot greenhouse film converts UV and blue light into red light, the spectrum produce uses most efficiently for photosynthesis. With more usable light reaching your crop, you can expect stronger vegetative growth, better fruit set, and up to 30% higher yields.

Designed for any greenhouse, UbiGro installs easily and goes to work immediately. For growers focused on consistent production and maximum output, it's a smart way to boost performance—one photon at a time.

ABSORPTION
Sunlight gets absorbed by proprietary quantum dots in UbiGro luminescent greenhouse film.

CONVERSION
Quantum dots convert the UV and blue light to red light, optimizing the sun's spectrum for photosynthesis.

RE-EMISSION
Optimized light is emitted and absorbed by the plants, boosting plant growth and health.



Scan the QR code to learn more about the power of UbiGro or visit **UbiGro.com**.

UbiGro
SPECTRUM CONTROL FOR GREENHOUSES

134 Eastgate Drive, Los Alamos, NM | (505) 310-6766

MAXIMIZE SPACE AND PRODUCTION WITH AGS

Built to reduce overall overhead and increase efficiency, the **AUTOMATED GUTTER SYSTEM** (AGS) is focused on bringing automation to the small to medium sized greenhouse, and is engineered to fit any greenhouse size.

By having the new plug planting and harvesting both located at the front of the greenhouse, we are able to **increase operational efficiency**, and with the **automatic gutter spacing and transfer system you will maximize your greenhouse footprint while reducing labor.**

GUTTERS SPACE AUTOMATICALLY

AUTOMATIC GUTTER TRANSFER

HARVEST YOUR CROP

TAYLOR SMITH | LUBING Horticulture National Sales Manager
(205) 902-3478 | taylor.smith@lubingusa.com

WATCH THIS VIDEO TO LEARN MORE

LUBING
HORTICULTURE SOLUTIONS

WWW.LUBINGUSA.COM | CUSTOMERSERVICE@LUBINGUSA.COM | 423-709-1000